What is claimed is:

1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a gate oxide over a substrate;
depositing a first layer of silicon over the gate oxide;
implanting dopants into the first layer;
depositing a second layer of silicon over the first layer;
etching the first and second layers to form a gate electrode;
implanting dopants within the substrate to form source/drain regions in the substrate; and
melting at least the first layer by laser thermal annealing.

2. The method of manufacturing a semiconductor device according to claim 1, wherein the first layer has a depth of about 200 to 500 angstroms.

3. The method of manufacturing a semiconductor device according to claim 2, wherein the second layer has a depth of about 300 to 4500 angstroms.

4. The method of manufacturing a semiconductor device according to claim 1, wherein said step of implanting dopants in the first layer amorphitizes the first layer.

5. The method of manufacturing a semiconductor device according to claim 1, wherein said step of implanting dopants to form the source/drain regions implants dopants into the second layer and amorphitizes at least a portion of the second layer.

6. The method of manufacturing a semiconductor device according to claim 5, wherein said step of melting the first layer also melts the amorphitized portion of the second layer.

7. The method of manufacturing a semiconductor device according to claim 1, wherein the first layer is doped at a concentration higher than a solubility limit of the dopants in the first layer.

8. The method of manufacturing a semiconductor device according to claim 1, further comprising the steps of forming source/drain extensions in the substrate adjacent to the gate electrode and forming sidewall spacers adjacent to the gate electrode.

9. The method of manufacturing a semiconductor device according to claim 8, wherein the source/drain extensions have a depth of about 50 to 300 angstroms.

10. The method of manufacturing a semiconductor device according to claim 1, wherein the source/drain regions have a depth of about 400 to 1000 angstroms.

11. The method of manufacturing a semiconductor device according to claim 1, wherein the laser thermal annealing activates the source/drain regions.

12. The method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor device is a MOSFET.

13. A method of manufacturing a MOSFET semiconductor device, comprising the steps of:

forming a gate oxide over a substrate;

depositing a first layer of silicon over the gate oxide to a depth of about 200 to 500 angstroms;

implanting dopants into the first layer at a concentration higher than a solubility limit of the dopants in the first layer;

depositing a second layer of silicon over the first layer to a depth of about 300 to 4500 angstroms;

etching the first and second layers to form a gate electrode;

forming source/drain extensions in the substrate adjacent to the gate electrode to a depth of about 50 to 300 angstroms;

implanting dopants within the substrate to form amorphitized source/drain regions in the substrate adjacent to the sidewall spacers to a depth of about 400 to 1000 angstroms and to amorphitize at least a portion of the second layer; and

melting the amorphitized first and second layers by laser thermal annealing,

wherein the laser thermal annealing activates the source/drain regions.